

Patent claims

1. A heat exchanger, especially gas cooler for a CO₂ coolant circuit of a motor vehicle air conditioning system, having at least one collecting box (2) which is divided into two longitudinal ducts (5, 6) by a longitudinal dividing wall (7), and a series of flat tubes (3) with flat tube ends (3a) which are accommodated in openings (4) in the collecting box (2), and are fluidically connected to the longitudinal ducts (5, 6), wherein the collecting box (2) with the longitudinal ducts (5, 6) is bent from a prepared sheet metal strip (8) with longitudinal edges (9, 10) having tongues (11, 12) and a central connecting region (14) having cutouts (13), the longitudinal edges (9, 10) forming the longitudinal dividing wall (7) and being anchored in the cutouts (13) via the tongues (11, 12).
2. The heat exchanger as claimed in claim 1, wherein the tongues (11, 12) and cutouts (13) are arranged on the side of the collecting box (2) facing the flat tubes (3).
3. The heat exchanger as claimed in claim 1, wherein the tongues (23) and the cutouts (24) are arranged on the side of the collecting box (21) facing away from the flat tubes (22).
4. The heat exchanger as claimed in claim 1, 2 or 3, wherein the longitudinal dividing wall (7, 25) has notches (15, 27) in which the flat tube ends (3a, 22a) engage.
5. The heat exchanger as claimed in one of the preceding claims, wherein the collecting box or parts of the collecting box are provided with corresponding shaped portions, integrally formed-on portions and/or beads which serve as stops for the tubes.

6. The heat exchanger as claimed in claim 4 or 5, wherein gaps (16, 28) are left between the notches (15, 27) and the flat tube ends (3a, 22a).

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7. The heat exchanger as claimed in claim 6, wherein the gaps (16) are formed in a U shape.

8. The heat exchanger as claimed in claim 6, wherein
10 the gaps are arranged laterally and the notches form a stop for the tube ends.

9. The heat exchanger as claimed in claim 6, wherein
15 gaps (28) are arranged above and/or below the flat tube ends (22a, 22b).

10. The heat exchanger as claimed in one of claims 1 to 9, wherein the tongues (11, 12; 23) and cutouts (13, 24) are arranged between the n-th flat tube (3, 22),
20 where $n = 1, 2, 3, 4, 5, \dots$

11. The heat exchanger as claimed in one of claims 1 to 10, wherein the cross sections of the longitudinal ducts (5, 6; 23, 24; 36, 37) are of approximately
25 circular design, in particular over a circumferential range of at least 270 degrees.

12. The heat exchanger as claimed in claim 11, wherein the central connecting region (35) which accommodates
30 the tongues (34) is stepped back in the direction of the longitudinal dividing wall (33) by an amount x and is curved toward the outside.

13. The heat exchanger as claimed in one of the
35 preceding claims, wherein the cross sections of the longitudinal ducts are different in shape and/or size.

14. The heat exchanger as claimed in one of the preceding claims, wherein the longitudinal dividing

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wall has at least one opening or notch or overflow opening.